Shoulder load and daily activities compared between power assisted and manual wheelchair propulsion.

No registrations found.

Ethical review	Positive opinion
Status	Pending
Health condition type	-
Study type	Interventional

Summary

ID

NL-OMON27067

Source
Nationaal Trial Register

Health condition

Manual wheelchair users with upper limb impairments or upper limb complaints. Manuele rolstoel gebruikers met beperkte arm-hand functie of aandoeningen aan de bovenste extremiteit.

Sponsors and support

Primary sponsor: Roessingh Research and Development b.v.
Source(s) of monetary or material Support: Supported by INTERREG The Netherlands and Germany (European Regional Development Fund of the European Union), grant 34 Interreg IV A.

Intervention

Outcome measures

Primary outcome

To assess if the forces and moments acting on the shoulder are lower during power assisted wheelchair propulsion compared to manual wheelchair propulsion, related to perceived load

of the upper extremity (VAS-score) and objectively measured with the oxygen uptake within six minutes.

Secondary outcome

To determine the differences between power assisted wheelchair and manual wheelchair propulsion on the three levels of the ICF model:

1. ICF: Body functions and structure:

A. Is the intensity, frequency and influence of shoulder pain on daily activities different during four weeks of power assisted wheelchair use compared to four weeks of manual wheelchair use?

2. ICF: Activity:

A. Is the use of a wheelchair during a day (travelled distance, time, and velocity) different during four weeks power assisted wheelchair use compared to four weeks manual wheelchair use?

B. Are wheelchair skills influenced by the power assisted wheelchair, compared to the manual wheelchair?

3. ICF: Participation:

A. Is community participation and self efficacy different during four weeks power assisted wheelchair use compared to four weeks manual wheelchair use?

B. Are the participants satisfied with the power assisted wheelchair?

Study description

Background summary

Objective:

The primary objective is to compare forces and moments acting on the shoulder of manual wheelchair users during power assisted wheelchair propulsion and manual wheelchair propulsion.

The secondary objectives are to assess the differences between power assist wheelchair propulsion and manual wheelchair propulsion on (a) the intensity and frequency of shoulder pain, (b) activity during a day, (c) community participation and quality of life.

Study design:

This study is a longitudinal experimental study.

Study population:

20 manual wheelchair users.

Intervention:

The applied intervention is a set of power assist wheels which are placed on participants own manual wheelchair. During one measurement an instrumented wheelchair with a force and torque sensor in the wheel axis is used.

Main study parameters/endpoints:

Main study parameter is shoulder load. Secondary study parameters were intensity and frequency of shoulder pain; distance, velocity and time daily travelled; wheelchair skills; energy expenditure; community participation, and quality of life; opinion about the power assisted wheelchair.

Study objective

Because the force needed to propel the wheelchair is partly delivered by a motor, we hypothesized that the forces and moments exerted on the rim will decrease. Consequently, forces and moments at the glenohumeral joint and muscle activation of push phase muscles will decrease. Less contact time on the rim will be necessary to generate enough torque to propel the wheelchair, which will result in a lower propulsion frequency and smaller glenohumeral joint angles. In addition wheelchair propulsion requires less effort with power assist which will result in a longer distance travelled and more involvements in social activities.

Study design

4 weeks of own manual wheelchair use and 4 weeks power assisted wheelchair use:

1. Intensity and frequency of shoulder pain (daily VAS);

2. Daily time and distance travelled (registered by means of a reedcontact);

3. Performed activities (daily questionnaire);
Measurements at Roessingh Research and Development (RRD):

A. Shoulder load;

B. Biomechanical analysis upper extremity; Force and torque sensor at the wheelaxis;

C. Wheelchair skills test;

D. Questionnaires: WUSPI, SEWMS, D-QUEST.

Intervention

The applied intervention is a set of power assist wheels which we place on the participants own manual wheelchair for four weeks.

Contacts

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Eligibility criteria

Inclusion criteria

1. Manual wheelchair user for at least one year due to a neurological disorder;

2. Medically and physically stable, judged by subjects own physician;

3. The upper limbs might be affected; however, they should be able to propel a manual wheelchair bimanually;

4. Able to maintain posture (trunk stability);

5. Age 18 to 65;

6. Subjects should be able to use their usual mode of transportation with the power assisted wheels;

7. Their wheelchair fitted with power assist wheels.

Exclusion criteria

1. Use of any type of power assisted wheelchairs;

2. Extreme shoulder pain, contractures upper extremity and/or spasticity which made manual wheelchair propulsion for the duration of the measurements impossible;

3. Cognitive or communicative impairments which made cooperation with the study protocol compromised.

Study design

Design

Study type:	Interventional
Intervention model:	Parallel
Allocation:	Non controlled trial
Masking:	Open (masking not used)
Control:	Active

Recruitment

NL

Recruitment status:	Pending
Start date (anticipated):	01-05-2011
Enrollment:	20
Type:	Anticipated

Ethics review

Positive opinion

Date:	21-12-2010
Application type:	First submission

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
NTR-new	NL2543
NTR-old	NTR2661
Other	Euregio : 7936 MIAS AAD
ISRCTN	ISRCTN wordt niet meer aangevraagd.

Study results

Summary results
N/A